

## CLAIMS

I claim:

1. A method for partitioning a three-dimensional graphical environment for displaying representative images of objects in a database comprising:

representing the database of objects with a hierarchical tree derived from object metadata;

- 5           pre-assigning a predetermined parent node to an area corresponding to the undivided graphical environment;

starting with the predetermined node, for each area corresponding to each parent node in the tree having at least two associated child nodes:

- 10                       recursively partitioning the area into a plurality of areas corresponding to each associated child node such that the areas are proportional to the weight of each child node.

2. A method as described in Claim 1 wherein recursively partitioning further comprising:

- 15           a) dividing the associated children nodes of the parent node into N groups of one or more nodes each dependent on a combined normalized node weight,  $W_N$ , of each group of nodes and such that  $W_N$  of each group approaches a ratio of  $R=1/N$ ;

- 20           b) partitioning the area associated with the parent node and assigning areas created by partitions to each group dependent on each group's combined weight;

- c) repeating a)-b) for all groups associated with the parent node until each group includes a single node

3. The method as described in Claim 2 wherein  $N=2$ .

4. The method as described in Claim 2 wherein recursively partitioning further comprising selecting one of a horizontal partition and a vertical partition.
5. The method as described in Claim 4 wherein recursively partitioning further comprising selecting one of the horizontal partition and vertical partition dependent on the aspect ratio of areas created by each of the horizontal partition and the vertical partition.
6. The method as described in Claim 5 wherein recursively partitioning further comprising selecting one of the horizontal partition and vertical partition having the least aspect ratio.
- 10 7. An apparatus for partitioning a three-dimensional graphical environment for displaying representative images of objects in a database comprising:
  - tree deriver for deriving a hierarchical tree representative of a database of objects from object metadata;
  - weight determiner for determining an associated weight for each node of the tree; and
  - 15 area partitioner for partitioning an area associated with the graphical environment into a plurality of areas such that the areas are proportional to node weights.
8. The apparatus as described in Claim 7 further comprising a node grouper for dividing a parent's associated child nodes into N groups of one or more nodes each dependent on a combined normalized node weight.
- 20 9. The apparatus as described in Claim 7 wherein the area partitioner further comprising a vertical partitioner for vertically partitioning and a horizontal partitioner for horizontally partitioning.
- 25 10. The apparatus as described in Claim 8 wherein the area partitioner further comprising a vertical partitioner for vertically partitioning and a horizontal partitioner for horizontally partitioning

11. The apparatus as described in Claim 9 wherein the area partitioner further  
comprising an aspect ratio determiner for determining the aspect ratio of areas  
created by each of the vertical partitioner and the horizontal partitioner and  
selecting one of a vertical partition and a horizontal partition dependent on the  
5 aspect ratio.

12. The apparatus as described in Claim 10 wherein the area partitioner further  
comprising an aspect ratio determiner for determining the aspect ratio of areas  
created by each of the vertical partitioner and the horizontal partitioner and  
selecting one of a vertical partition and a horizontal partition dependent on the  
10 aspect ratio